ABSTRACT

The present invention relates to novel agropolymers, which comprise a carbohydrate and/or silica matrix substantially devoid of proteins, tannins and polyphenols and which comprise metal binding reactive sites. A method of producing the agropolymers is also disclosed wherein the agropolymers are derived from plant materials such as seed coats, seed covers, husks, or hulls of various agricultural crops. The agricultural crops typically used to produce the agropolymers include *Oryza sativa, Panicum miliaceum, Setaria italica, Cajanus cajan, Vigna mungo, Vigna radiata, Triticum sp., Ricinus communis, Helianthus annus, Gossypium sp.*, and *Arachis sp.* The agropolymers of the present invention are capable of purifying aqueous solutions polluted or contaminated with metals and/or ions. Thus, the present invention also discloses a method whereby agropolymers are used in the purification of contaminated water and other aqueous solutions. The agropolymers disclosed herein are useful in several industrial applications including purifying polluted drinking water or ground water.